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Security Council

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Note by the President of the Security Council

At its 6335th meeting, held on 9 June 2010 in connection with the item entitled "Non-proliferation", the Security Council adopted resolution 1929 (2010).

In paragraph 4 of the resolution, the Security Council requested the Director General of the International Atomic Energy Agency to communicate to the Security Council all his reports on the application of safeguards in the Islamic Republic of Iran.

Accordingly, the President herewith circulates the report of the Director General dated 14 November 2013 (see annex).

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Annex

Letter dated 14 November 2013 from the Director General of the International Atomic Energy Agency addressed to the President of the Security Council

I have the honour to enclose herewith the report requested by the Security Council in its resolution 1929 (2010), which I have submitted today to the Board of Governors of the International Atomic Energy Agency (see enclosure).

I should be grateful if you would bring this letter and the enclosed report to the attention of all members of the Security Council.

(*Signed*) Yukiya **Amano**

Enclosure

[Original: Arabic, Chinese, English, French, Russian and Spanish]

Implementation of the NPT Safeguards Agreement and relevant provisions of Security Council resolutions in the Islamic Republic of Iran*

Report by the Director General

Main developments

The main developments since the Director General's previous report are as follows:

- On 11 November 2013, the Agency and Iran signed a "Joint Statement on a Framework for Cooperation" that included six initial practical measures to be taken by Iran within three months.
- The rate of production of UF_6 enriched up to 5% U-235 remains similar to that indicated in the previous report; the amount of nuclear material that remains in the form of UF_6 enriched up to 5% U-235 is 7,154.3 kg.
- The rates of production of UF_6 enriched up to 20% U-235 remain similar to those indicated in the previous report; the further processing of such material has continued; the amount of material that remains in the form of UF_6 enriched up to 20% U-235 is approximately 196 kg.
- No additional IR-2m centrifuges have been installed at FEP; none of the IR-2m centrifuges already installed there have been fed with UF_6.
- No additional major components have been installed at the IR-40 Reactor; the production of UO_2 for fuel assemblies for the reactor has continued at FMP; no additional fuel assemblies have yet been completed.

* Circulated to the Board of Governors of the International Atomic Energy Agency under the symbol GOV/2013/56.

A. Introduction

1. This report of the Director General to the Board of Governors and, in parallel, to the Security Council, is on the implementation of the NPT Safeguards Agreement[1] and relevant provisions of Security Council resolutions in the Islamic Republic of Iran (Iran).

2. The Security Council has affirmed that the steps required by the Board of Governors in its resolutions[2] are binding on Iran.[3] The relevant provisions of the aforementioned Security Council resolutions[4] were adopted under Chapter VII of the United Nations Charter, and are mandatory, in accordance with the terms of those resolutions.[5] The full implementation of Iran's obligations is needed in order to ensure international confidence in the exclusively peaceful nature of its nuclear programme.

3. This report addresses developments since the Director General's previous report (GOV/2013/40, 28 August 2013), as well as issues of longer standing.

B. Clarification of unresolved issues

4. As previously reported,[6] the Board of Governors, in its resolution of November 2011 (GOV/2011/69), stressed that it was essential for Iran and the Agency to intensify their dialogue aimed at the urgent resolution of all outstanding substantive issues for the purpose of providing clarifications regarding those issues, including access to all relevant information, documentation, sites, material and personnel in Iran. In its resolution of September 2012 (GOV/2012/50), the Board of Governors decided that Iranian cooperation with Agency requests aimed at the resolution of all outstanding issues was essential and urgent in order to restore international

[1] The Agreement between Iran and the Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons (INFCIRC/214), which entered into force on 15 May 1974.

[2] The Board of Governors has adopted 12 resolutions in connection with the implementation of safeguards in Iran: GOV/2003/69 (12 September 2003); GOV/2003/81 (26 November 2003); GOV/2004/21 (13 March 2004); GOV/2004/49 (18 June 2004); GOV/2004/79 (18 September 2004); GOV/2004/90 (29 November 2004); GOV/2005/64 (11 August 2005); GOV/2005/77 (24 September 2005); GOV/2006/14 (4 February 2006); GOV/2009/82 (27 November 2009); GOV/2011/69 (18 November 2011); and GOV/2012/50 (13 September 2012).

[3] In resolution 1929 (2010), the Security Council, inter alia: affirmed that Iran shall, without further delay, take the steps required by the Board of Governors in GOV/2006/14 and GOV/2009/82; reaffirmed Iran's obligation to cooperate fully with the IAEA on all outstanding issues, particularly those which give rise to concerns about the possible military dimensions of the Iranian nuclear programme; decided that Iran shall, without delay, comply fully and without qualification with its Safeguards Agreement, including through the application of modified Code 3.1 of the Subsidiary Arrangements; and called upon Iran to act strictly in accordance with the provisions of its Additional Protocol and to ratify it promptly (paras. 1-6).

[4] The United Nations Security Council has adopted the following resolutions on Iran: 1696 (2006); 1737 (2006); 1747 (2007); 1803 (2008); 1835 (2008); and 1929 (2010).

[5] By virtue of its Relationship Agreement with the United Nations (INFCIRC/11, Part I.A), the Agency is required to cooperate with the Security Council in the exercise of the Council's responsibility for the maintenance or restoration of international peace and security. All Member States of the United Nations agree to accept and carry out the decisions of the Security Council and, in this respect, to take actions which are consistent with their obligations under the United Nations Charter.

[6] GOV/2013/40, para. 4.

confidence in the exclusively peaceful nature of Iran's nuclear programme. Between January 2012 and May 2013, the Agency and Iran held ten rounds of talks in Vienna and Tehran, aimed at reaching agreement on a structured approach document for resolving outstanding issues related to Iran's nuclear programme. However, no concrete results were achieved during those talks.

5. During discussions on 28 and 29 October 2013 in Vienna,[7] the Agency and Iran concluded that, as the negotiations on a structured approach document had become deadlocked and there was no prospect for agreement on the document, a new approach aimed at ensuring the exclusively peaceful nature of Iran's nuclear programme should be developed.

6. At a meeting in Tehran on 11 November 2013, the Director General, on behalf of the Agency, and H.E. Ali Akbar Salehi, Vice President of Iran and President of the Atomic Energy Organization of Iran (AEOI), on behalf of Iran, signed a "Joint Statement on a Framework for Cooperation" (the Framework for Cooperation) (GOV/INF/2013/14, 11 November 2013).

7. In the Framework for Cooperation, the Agency and Iran agreed to cooperate further with respect to verification activities to be undertaken by the Agency to resolve all present and past issues, and to proceed with such activities in a step by step manner. The initial practical measures to be taken by Iran within three months of the signature of the Framework for Cooperation, and set out in an Annex thereto, are as follows:

- Providing mutually agreed relevant information and managed access to the Gchine mine in Bandar Abbas.
- Providing mutually agreed relevant information and managed access to the Heavy Water Production Plant.
- Providing information on all new research reactors.
- Providing information with regard to the identification of 16 sites designated for the construction of nuclear power plants.
- Clarification of the announcement made by Iran regarding additional enrichment facilities.
- Further clarification of the announcement made by Iran with respect to laser enrichment technology.

The Agency will continue to take into account Iran's security concerns, including through the use of managed access and the protection of confidential information. The Agency will report to the Board of Governors on progress in the implementation of these practical measures.

8. While in Tehran, the Director General also held a meeting with H.E. Mohammad Javad Zarif, Foreign Minister of Iran, during which a number of issues of mutual interest were discussed.

9. At a technical meeting held in Tehran on 11 November 2013, Agency and Iranian officials discussed arrangements to begin the implementation of the six

[7] A preliminary meeting between the Agency and Iran was also held in Vienna on 27 September 2013 (GOV/2013/40, para. 5).

initial practical measures listed in the Annex of the Framework for Cooperation. Further discussions will be held at the next technical meeting, scheduled for 11 December 2013 in Vienna.

C. Facilities declared under Iran's Safeguards Agreement

10. Under its Safeguards Agreement, Iran has declared to the Agency 17 nuclear facilities and nine locations outside facilities where nuclear material is customarily used (LOFs) (Annex I).[8] Notwithstanding that certain of the activities being undertaken by Iran at some of the facilities are contrary to the relevant resolutions of the Board of Governors and the Security Council, as indicated below, the Agency continues to verify the non-diversion of declared material at these facilities and LOFs.

D. Enrichment-related activities

11. Contrary to the relevant resolutions of the Board of Governors and the Security Council, Iran has not suspended its enrichment-related activities in the declared facilities referred to below. All of these activities are under Agency safeguards, and all of the nuclear material, installed cascades and the feed and withdrawal stations at those facilities are subject to Agency containment and surveillance.[9]

12. Iran has stated that the purpose of enriching UF_6 up to 5% U-235 is the production of fuel for its nuclear facilities[10] and that the purpose of enriching UF_6 up to 20% U-235 is the manufacture of fuel for research reactors.[11]

13. Since Iran began enriching uranium at its declared facilities, it has produced at those facilities:

- 10,357 kg (+653 kg since the Director General's previous report) of UF_6 enriched up to 5% U-235, of which 7,154.3 kg (+380.3 kg since the Director General's previous report) remain in the form of UF_6 enriched up to 5% U-235[12] and the rest has been further processed (as detailed in paras. 22, 28 and 41 below); and
- 410.4 kg (+37.9 kg since the Director General's previous report) of UF_6 enriched up to 20% U-235, of which approximately 196 kg[13] (approximately +10 kg since the Director General's previous report) remain in the form of UF_6

[8] All of the LOFs are situated within hospitals.

[9] In line with normal safeguards practice, small amounts of nuclear material (e.g., some waste and samples) may not be subject to containment and surveillance.

[10] As declared by Iran in its design information questionnaires (DIQs) for the Fuel Enrichment Plant (FEP) at Natanz.

[11] GOV/2010/10, para. 8; as declared by Iran in its DIQ for the Fuel Plate Fabrication Plant (FPFP). Iran has also recently informed the Agency that small amounts of uranium enriched up to 20% U-235 in the form of U_3O_8-Al fuel plates will also be used for the production of radioisotopes (see para. 63).

[12] This comprises nuclear material in storage, as well as nuclear material in the cold traps and inside cylinders still attached to the enrichment process.

[13] This figure is approximate in light of the period between the dates of the most recent figures for production and the date of the most recent figure for conversion.

enriched up to 20% U-235[14] and the rest has been further processed (as detailed in para. 50 below).

D.1. Natanz

14. **Fuel Enrichment Plant**: FEP is a centrifuge enrichment plant for the production of low enriched uranium (LEU) enriched up to 5% U-235, which was first brought into operation in 2007. The plant is divided into Production Hall A and Production Hall B. According to design information submitted by Iran, eight units, each containing 18 cascades, are planned for Production Hall A, which totals approximately 25,000 centrifuges in 144 cascades. Currently, one unit contains IR-2m centrifuges; five contain IR-1 centrifuges; and the other two units do not contain centrifuges. Iran has yet to provide the corresponding design information for Production Hall B.

15. As of 9 November 2013, in Production Hall A, Iran had fully installed 90 IR-1 cascades and completed preparatory installation work for the other 36 IR-1 cascades.[15] On that date, Iran declared that it was feeding 52 of the fully installed IR-1 cascades with natural UF_6 (Annex II, Figure 1).

16. In one of the units of Production Hall A, as of 9 November 2013, six cascades had been fully installed with IR-2m centrifuges and were under vacuum, and preparatory installation work had been completed for the other 12 IR-2m cascades in the unit.[16] As of the same date, none of the IR-2m centrifuges at FEP had been fed with natural UF_6. As previously reported,[17] Iran has indicated that the performance of IR-2m cascades will be tested using the six fully installed cascades and that it intends temporarily to withdraw the product and tails of these cascades separately from those of the cascades containing the IR-1 centrifuges.

17. Between 19 October 2013 and 11 November 2013, the Agency conducted a physical inventory verification (PIV) at FEP to verify the inventory as declared by Iran on 20 October 2013. The results of the PIV are now being evaluated by the Agency. As of 5 November 2013, Iran had fed 118,470 kg of natural UF_6 into the cascades at FEP since production began in February 2007 and produced a total of approximately 10,357 kg of UF_6 enriched up to 5% U-235.[18]

18. Based on the results of the analysis of environmental samples taken at FEP,[19] and other verification activities, the Agency has concluded that the facility has operated as declared by Iran in the relevant design information questionnaire (DIQ).

19. **Pilot Fuel Enrichment Plant**: PFEP is a pilot LEU production, and research and development (R&D) facility, which was first brought into operation in October

[14] This comprises nuclear material in storage, nuclear material in the cold traps and inside cylinders still attached to the enrichment process, and nuclear material in cylinders attached to the conversion process.

[15] As of 9 November 2013, 15 420 IR-1 centrifuges (+4 since the Director General's previous report) were installed in FEP.

[16] As of 9 November 2013, 1008 IR-2m centrifuges (unchanged from the Director General's previous report) were installed in FEP.

[17] GOV/2013/40, para. 15.

[18] Based on the amounts of UF_6 enriched up to 5% U-235 verified by the Agency (as of 20 October 2013) and the amounts of UF_6 enriched up to 5% U-235 estimated by Iran (covering the period 21 October 2013 to 5 November 2013).

[19] Results are available to the Agency for samples taken up to 5 June 2013.

2003. It can accommodate six cascades, and is divided between an area designated by Iran for the production of UF_6 enriched up to 20% U-235 (Cascades 1 and 6) and an area designated by Iran for R&D (Cascades 2, 3, 4 and 5).

20. Between 14 September 2013 and 1 October 2013, the Agency conducted a PIV at PFEP to verify the inventory as declared by Iran on 15 September 2013. The results of the PIV are now being evaluated by the Agency.

21. ***Production area***: As of 28 October 2013, Iran was continuing to feed low enriched UF_6 into two interconnected cascades (Cascades 1 and 6) containing a total of 328 IR-1 centrifuges (Annex II, Figure 1).

22. As of 25 October 2013, Iran had fed 1,540.8 kg of UF_6 enriched up to 5% U-235 into the cascades in the production area since production began in February 2010 and produced a total of approximately 189.0 kg of UF_6 enriched up to 20% U-235,[20] 182.8 kg of which have been withdrawn from the process and verified by the Agency.

23. ***R&D area***: Since the Director General's previous report, Iran has been intermittently feeding natural UF_6 into IR-6s centrifuges as single machines and into IR-1, IR-2m, IR-4 and IR-6 centrifuges, sometimes into single machines and sometimes into cascades of various sizes.[21] The single installed IR-5 centrifuge has yet to be fed with natural UF_6.

24. Between 17 August 2013 and 25 October 2013, a total of approximately 245.3 kg of natural UF_6 was fed into centrifuges in the R&D area, but no LEU was withdrawn as the product and the tails were recombined at the end of the process.

25. Based on the results of the analysis of environmental samples taken at PFEP,[22] and other verification activities, the Agency has concluded that the facility has operated as declared by Iran in the relevant DIQ.

D.2. Fordow

26. **Fordow Fuel Enrichment Plant**: FFEP is, according to the DIQ of 18 January 2012, a centrifuge enrichment plant for the production of UF_6 enriched up to 20% U-235 and the production of UF_6 enriched up to 5% U-235.[23] The facility, which was first brought into operation in 2011, is designed to contain up to 2,976 centrifuges in 16 cascades, divided between Unit 1 and Unit 2. To date, all of the centrifuges installed are IR-1 machines (Annex II, Figure 1).[24] Iran has yet to inform the Agency

[20] Based on the amounts of UF_6 enriched up to 20% U-235 verified by the Agency (as of 15 September 2013) and the amounts of UF_6 enriched up to 20% U-235 estimated by Iran (covering the period 16 September 2013 to 25 October 2013).

[21] On 3 November 2013, there were 14 IR-4 centrifuges, 13 IR-6 centrifuges, one IR-6s centrifuge and one IR-5 centrifuge installed in Cascade 2, 14 IR-1 centrifuges and two IR-2m centrifuges installed in Cascade 3, 164 IR-4 centrifuges installed in Cascade 4 and 162 IR-2m centrifuges installed in Cascade 5.

[22] Results are available to the Agency for samples taken up to 19 May 2013.

[23] GOV/2009/74, paras. 7 and 14; GOV/2012/9, para. 24. To date, Iran has provided the Agency with an initial DIQ and three revised DIQs, each of which stated a different purpose for FFEP. In light of the difference between the original stated purpose of the facility and the purpose for which it is now being used, additional information from Iran is still required.

[24] As of 2 November 2013, 2,710 centrifuges were installed at FFEP (unchanged from the Director General's previous report).

which of the cascades are to be used for enrichment of UF_6 up to 5% U-235 and/or for enrichment of UF_6 up to 20% U-235.[25]

27. As of 2 November 2013, Iran was continuing to feed four cascades (configured in two sets of two interconnected cascades) of Unit 2 with UF_6 enriched up to 5% U-235; none of the other 12 cascades in FFEP had been fed with UF_6.

28. As of 1 November 2013, Iran had fed 1,609.3 kg of UF_6 enriched up to 5% U-235 into the cascades at FFEP since production began in December 2011 and produced a total of approximately 221.4 kg of UF_6 enriched up to 20% U-235,[26] 195.4 kg of which have been withdrawn from the process and verified by the Agency.

29. Based on the results of the analysis of environmental samples taken at FFEP,[27] and other verification activities, the Agency has concluded that the facility has operated as declared by Iran in its most recent DIQ for FFEP.

E. Reprocessing activities

30. Pursuant to the relevant resolutions of the Board of Governors and the Security Council, Iran is obliged to suspend its reprocessing activities, including R&D.[28] Iran has stated that it "does not have reprocessing activities".[29]

31. The Agency has continued to monitor the use of hot cells at the Tehran Research Reactor (TRR)[30] and the Molybdenum, Iodine and Xenon Radioisotope Production (MIX) Facility.[31] The Agency carried out an inspection and design information verification (DIV) at TRR on 27 October 2013, and a DIV at the MIX Facility on 9 October 2013. It is only with respect to TRR, the MIX Facility and the other facilities to which the Agency has access that the Agency can confirm that there are no ongoing reprocessing-related activities in Iran.

F. Heavy water-related projects

32. Contrary to the relevant resolutions of the Board of Governors and the Security Council, Iran has not suspended work on all heavy water-related projects, including, at Arak, the ongoing construction of the Iran Nuclear Research Reactor (IR-40 Reactor), which is under Agency safeguards, and the production of heavy

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[25] In a letter dated 23 May 2012, Iran informed the Agency that it would be notified about the enrichment level of the cascades prior to their operation (GOV/2012/23, para. 25).

[26] Based on the amounts of UF_6 enriched up to 20% U-235 verified by the Agency (as of 17 November 2012) and the amounts of UF_6 enriched up to 20% U-235 estimated by Iran (covering the period 18 November 2012 to 1 November 2013).

[27] Results are available to the Agency for samples taken up to 20 May 2013.

[28] S/RES/1696 (2006), para. 2; S/RES/1737 (2006), para. 2; S/RES/1747 (2007), para. 1, S/RES/1803 (2008), para. 1; S/RES/1835 (2008), para. 4; and S/RES/1929 (2010), para. 2.

[29] Letter to the Agency dated 15 February 2008.

[30] TRR is a 5 MW reactor which operates with 20% U-235 enriched fuel and is used for the irradiation of different types of targets and for research and training purposes.

[31] The MIX Facility is a hot cell complex for the separation of radiopharmaceutical isotopes from targets, including uranium, irradiated at TRR. The MIX Facility is not currently processing any uranium targets.

water at the Heavy Water Production Plant (HWPP), which is not under Agency safeguards.[32]

33. **IR-40 Reactor**: The IR-40 Reactor is a 40 MW heavy water moderated research reactor designed to contain 150 fuel assemblies containing natural uranium in the form of UO_2.

34. On 26 October 2013, the Agency carried out a DIV at the IR-40 Reactor and observed that, since the Director General's previous report,[33] while the reactor vessel had been connected to the cooling and moderator piping, no other major components, such as the control room equipment, the refuelling machine and reactor cooling pumps, had been installed. As previously reported, Iran has informed the Agency that it has produced sufficient heavy water for the commissioning of the IR-40 Reactor.[34]

35. Iran has continued the production of nuclear fuel assemblies for the IR-40 Reactor (see para. 47 below).

36. As previously reported,[35] Iran has informed the Agency that the "start-up"[36] date for the IR-40 Reactor could not be in the first quarter of 2014.

37. Iran is required to provide the Agency with an updated DIQ for the IR-40 Reactor (see section I below), which it has not done since 2006.[37] At that time, the IR-40 Reactor was in a very early stage of construction. The Agency needs updated design information as early as possible in order, inter alia, to ensure that all possible diversion paths are identified, and appropriate safeguards measures and customized safeguards equipment are put in place.

38. **Heavy Water Production Plant**: The HWPP is a facility for the production of heavy water with a design capacity to produce 16 tons of heavy water of nuclear grade per year.

39. Since its visit to the HWPP in August 2011, the Agency has made a number of requests for access to the plant. In the Framework for Cooperation, Iran has agreed to provide the Agency with mutually agreed relevant information and managed access to the HWPP within three months. On 11 November 2013, at the technical meeting referred to above (see para. 9), it was agreed that Iran would provide the Agency with access to the HWPP in the near future. By a letter dated 12 November 2013, Iran agreed to provide the Agency with access to the heavy water stored at the Uranium Conversion Facility (UCF) and to permit the Agency to perform non-destructive measurements.[38] Iran also stated that, due to "technical problems", sampling for

[32] S/RES/1737 (2006), para. 2; S/RES/1747 (2007), para. 1; S/RES/1803 (2008), para. 1; S/RES/1835 (2008), para. 4; and S/RES/1929 (2010), para. 2.

[33] GOV/2013/40, para. 33.

[34] GOV/2013/40, para. 33.

[35] GOV/2013/40, para. 35.

[36] Iran has indicated to the Agency that "start-up" means commissioning using nuclear material.

[37] The most recent DIQ for the IR-40 Reactor provided by Iran was dated 24 May 2006. In October 2006 and January 2007, in response to requests from the Agency, Iran provided some additional information with respect to that DIQ. In May 2013, Iran provided some updated information regarding the reactor vessel received at the IR-40 Reactor site. However, key characteristics of the facility design have still not been provided. In its letter of 25 August 2013, Iran noted that a revised DIQ would be submitted to the Agency "at least six months prior to the first introduction of nuclear material into the facility".

[38] GOV/2010/10, paras. 20 and 21.

destructive analysis of the heavy water could only be envisaged in the "near future". The Agency performed the non-destructive measurements on 12 November 2013.[39]

G. Uranium conversion and fuel fabrication

40. Although Iran is obliged to suspend all enrichment-related activities and heavy water-related projects, it is conducting a number of activities at UCF, the Enriched UO_2 Powder Plant (EUPP), the Fuel Manufacturing Plant (FMP) and the Fuel Plate Fabrication Plant (FPFP) at Esfahan, as indicated below, which are in contravention of those obligations, notwithstanding that the facilities are under Agency safeguards.

41. Since Iran began conversion and fuel fabrication at its declared facilities, it has, inter alia:

- Produced 550 tons of natural UF_6 at UCF, of which 129 tons have been transferred to FEP;
- Fed into the R&D conversion process at UCF 53 kg of UF_6 enriched to 3.34% U-235 and produced 24 kg of uranium in the form of UO_2;[40]
- Fed into the conversion process at FPFP 213.5 kg of UF_6 enriched up to 20% U-235 (+28.4 kg since the Director General's previous report) and produced 88.4 kg of uranium in the form of U_3O_8; and
- Transferred to TRR 20 fuel assemblies containing uranium enriched up to 20% U-235 and two fuel assemblies containing uranium enriched to 3.34% U-235.

42. **Uranium Conversion Facility**: UCF is a conversion facility for the production of both natural UF_6 and natural UO_2 from uranium ore concentrate (UOC). It is planned that UCF will also produce uranium metal ingots from natural and depleted UF_4, and produce UF_4 from depleted UF_6.

43. As a result of the PIV carried out by the Agency at UCF in April 2013, the Agency has verified, within the measurement uncertainties normally associated with such a facility, the inventory as declared by Iran on 20 April 2013.

44. Iran has continued to conduct R&D conversion activities using low enriched uranium compounds for the production of UO_2.[41] Iran has declared that, as of 26 October 2013, it had produced 11.5 tons of natural uranium in the form of UO_2 through the conversion of UOC.[42] The Agency has verified that, as of the same date, Iran had transferred all of this material to FMP.

45. **Enriched UO_2 Powder Plant**: EUPP is a facility for the conversion of UF_6 enriched up to 5% U-235 into UO_2 powder.[43] During a DIV carried out on 30 October 2013, the Agency confirmed that the facility had yet to be commissioned. In a letter dated 4 November 2013, Iran informed the Agency of the operational schedule for EUPP, which indicated that hot tests would start on 7 December 2013, immediately after which the facility would commence operation.

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[39] The measurements were performed to confirm the absence of nuclear material at that location.

[40] GOV/2012/55, para. 35.

[41] GOV/2013/6, para. 38; Iran had previously conducted similar R&D conversion activities using UF_6 enriched up to 3.34% U-235 (GOV/2012/55, para. 35).

[42] This amount only refers to material qualified for fuel fabrication.

[43] GOV/2013/40, para. 45.

46. **Fuel Manufacturing Plant**: FMP is a facility for the fabrication of nuclear fuel assemblies for power and research reactors.

47. On 1 to 3 September 2013, the Agency carried out a PIV and a DIV at FMP, the results of which are now being evaluated by the Agency. As of 28 October 2013, the Agency verified that Iran had not completed the production of any other nuclear fuel assemblies using natural UO_2 for the IR-40 Reactor in addition to the ten that the Agency had previously verified,[44] although the Agency observed that Iran was in the process of producing another one.[45] All of the fuel assemblies remain at FMP. In a letter dated 4 November 2013, Iran provided the Agency with an updated operational schedule for FMP, which indicated its plan to produce another 140 nuclear fuel assemblies for the IR-40 Reactor by 8 August 2014 (see para. 33 above).

48. **Fuel Plate Fabrication Plant**: FPFP is a facility for the conversion of UF_6 enriched up to 20% U-235 into U_3O_8 and the manufacture of fuel assemblies made of fuel plates containing U_3O_8.

49. On 20 August 2013, in light of the forthcoming PIV and in order to undertake maintenance, Iran temporarily shut down its process of converting UF_6 enriched up to 20% U-235 into U_3O_8 at FPFP. On 9 to 11 September 2013, the Agency carried out a PIV and a DIV at FPFP, the results of which are now being evaluated by the Agency. Iran has informed the Agency that it resumed conversion on 5 November 2013.

50. The Agency has verified that, as of 6 November 2013, Iran had fed a total of 213.5 kg of UF_6 enriched up to 20% U-235 (144.2 kg of uranium) into the conversion process of FPFP and had produced 88.4 kg of uranium in the form of U_3O_8. On the same date, the Agency verified that 28.7 kg of uranium were contained in solid and liquid scrap. The remainder of the uranium that was fed into the process remains in the process and in waste.

51. The Agency has verified that, as of 6 November 2013, Iran had produced at FPFP one experimental fuel assembly and 22 TRR-type fuel assemblies. Twenty of these fuel assemblies, including the experimental assembly, had been transferred to TRR.

H. Possible military dimensions

52. Previous reports by the Director General have identified outstanding issues related to possible military dimensions to Iran's nuclear programme and actions required of Iran to resolve these.[46] Since 2002, the Agency has become increasingly concerned about the possible existence in Iran of undisclosed nuclear-related activities involving military-related organizations, including activities related to the development of a nuclear payload for a missile. Iran is required to cooperate fully with the Agency on all outstanding issues, particularly those which give rise to concerns about the possible military dimensions to Iran's nuclear programme,

[44] GOV/2013/40, para. 47.

[45] GOV/2013/27, para. 33.

[46] See, for example: GOV/2011/65, paras. 38-45 and Annex; GOV/2011/29, para. 35; GOV/2011/7, Attachment; GOV/2010/10, paras. 40-45; GOV/2009/55, paras. 18-25; GOV/2008/38, paras. 14-21; GOV/2008/15, paras. 14-25 and Annex; GOV/2008/4, paras. 35-42.

including by providing access without delay to all sites, equipment, persons and documents requested by the Agency.[47]

53. The Annex to the Director General's November 2011 report (GOV/2011/65) provided a detailed analysis of the information available to the Agency, indicating that Iran has carried out activities that are relevant to the development of a nuclear explosive device. This information is assessed by the Agency to be, overall, credible.[48] Iran has dismissed the Agency's concerns, largely on the grounds that Iran considers them to be based on unfounded allegations.[49] Since November 2011, the Agency has obtained more information which further corroborates the analysis contained in that Annex.

54. The outstanding issues that are not addressed by the practical measures listed in the Annex of the Framework for Cooperation, including those issues identified in previous reports of the Director General to the Board of Governors, will be addressed in subsequent steps. In this regard, the Agency will continue to seek answers from Iran to the detailed questions provided to Iran regarding Parchin[50] and the foreign expert,[51] and to request access to a location at the Parchin site where the Agency has information provided by Member States indicating that Iran had constructed a large explosives containment vessel in which to conduct hydrodynamic experiments.[52] Since the Agency's first request for access, extensive activities have taken place at this location that will have seriously undermined the Agency's ability to conduct effective verification.[53]

I. Design information

55. Under the terms of its Safeguards Agreement and relevant resolutions of the Board of Governors and the Security Council, Iran is required to implement the provisions of the modified Code 3.1 of the Subsidiary Arrangements General Part concerning the early provision of design information.[54] As well as increasing confidence in the absence of undeclared nuclear facilities, the early provision of such information enables the Agency to verify the design of declared facilities and to implement effective safeguards at such facilities. This is particularly relevant to the facilities listed below.

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[47] S/RES/1929, paras. 2 and 3.

[48] GOV/2011/65, Annex, Section B.

[49] GOV/2012/9, para. 8.

[50] GOV/2012/23, para. 5.

[51] GOV/2011/65, Annex, para. 44.

[52] Such experiments would be strong indicators of possible nuclear weapon development (GOV/2011/65, Annex, paras. 49-51).

[53] For a list of the most significant developments observed by the Agency at this location between February 2012 and the publication of the Director General's May 2013 report, see GOV/2012/55, para. 44; GOV/2013/6, para. 52; and GOV/2013/27, para. 55.

[54] In accordance with Article 39 of Iran's Safeguards Agreement, agreed Subsidiary Arrangements cannot be changed unilaterally; nor is there a mechanism in the Safeguards Agreement for the suspension of provisions agreed to in the Subsidiary Arrangements. Therefore, as previously explained in the Director General's reports (see, for example, GOV/2007/22, 23 May 2007), the modified Code 3.1, as agreed to by Iran in 2003, remains in force. Iran is further bound by operative paragraph 5 of Security Council resolution 1929 (2010) to "comply fully and without qualification with its IAEA Safeguards Agreement, including through the application of modified Code 3.1".

56. **Research reactors**: As indicated above (para. 37), updated design information for the IR-40 Reactor is required of Iran and urgently needed by the Agency.

57. As previously reported,[55] Iran has informed the Agency that four new research reactors were "in preliminary site selection phase" and that certain potential locations were "under evaluation". In the Framework for Cooperation, Iran has agreed to provide the Agency within three months with information on all new research reactors.

58. **Enrichment facilities**: In February 2010, Iran announced that it possessed laser enrichment technology,[56] and in August 2010, made an announcement in relation to the construction of ten new uranium enrichment facilities, the sites for five of which had been decided.[57] In the Framework for Cooperation, Iran has agreed to provide the Agency within three months with clarification of both of these announcements.

59. **Nuclear power plants**: In the Framework for Cooperation, Iran has agreed to provide the Agency within three months with information in relation to the identification by Iran of 16 sites designated for the construction of nuclear power plants.[58]

J. Additional Protocol

60. Contrary to the relevant resolutions of the Board of Governors and the Security Council, Iran is not implementing its Additional Protocol. The Agency will not be in a position to provide credible assurance about the absence of undeclared nuclear material and activities in Iran unless and until Iran provides the necessary cooperation with the Agency, including by implementing its Additional Protocol.[59]

K. Other matters

61. As indicated in the Director General's previous report,[60] in May 2013 the Agency verified at the Heavy Water Zero Power Reactor at Esfahan the presence of 36 prototype fuel assemblies, which had been manufactured at FMP. In a letter dated 18 May 2013, Iran informed the Agency that these 36 prototype fuel assemblies were to be used for experiments to "measure some parameters of the fuel and parameters of heavy water lattice". Since the previous report, Iran has informed the Agency that these prototype fuel assemblies had been loaded into the core of the reactor.

62. During an inspection carried out on 27 October 2013, the Agency confirmed that five fuel assemblies that had been produced in Iran and which contain uranium that was enriched in Iran up to 3.5% and up to 20% U-235 were in the core of TRR.[61] On

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[55] GOV/2013/27, para. 60.

[56] Cited on the website of the Presidency of the Islamic Republic of Iran, 7 February 2010, at http://www.president.ir/en/?ArtID=20255.

[57] "Iran Specifies Location for 10 New Enrichment Sites", Fars News Agency, 16 August 2010.

[58] GOV/2013/27, para. 62.

[59] Iran's Additional Protocol was approved by the Board of Governors on 21 November 2003 and signed by Iran on 18 December 2003, although it has not been brought into force. Iran provisionally implemented its Additional Protocol between December 2003 and February 2006.

[60] GOV/2013/40, para. 63.

[61] On 27 October 2013, the core of TRR comprised a total of 33 fuel assemblies.

the same date, the Agency observed that the prototype IR-40 fuel assembly was in the core of TRR for irradiation testing.[62]

63. As of 9 October 2013, the MIX facility had yet to receive from FPFP fuel plates containing a "mixture of U_3O_8 (up to 20% enriched) and aluminium" for the production of "^{99}Mo, ^{133}Xe and ^{132}I" isotopes.[63]

64. On 30 October 2013, the Agency conducted a PIV at the Bushehr Nuclear Power Plant, at which time the reactor was operating at 100% of its nominal power.

L. Summary

65. While the Agency continues to verify the non-diversion of declared nuclear material at the nuclear facilities and LOFs declared by Iran under its Safeguards Agreement, the Agency is not in a position to provide credible assurance about the absence of undeclared nuclear material and activities in Iran, and therefore to conclude that all nuclear material in Iran is in peaceful activities.[64]

66. The Framework for Cooperation marks an important step forward. In the Framework for Cooperation, the Agency and Iran agreed to cooperate further with respect to verification activities to be undertaken by the Agency to resolve all present and past issues and that Iran will implement the initial practical measures within three months. The outstanding issues that are not addressed by the practical measures listed in the Annex of the Framework, including those issues identified in previous reports of the Director General to the Board of Governors, will be addressed in subsequent steps.

67. The Director General continues to urge Iran to fully implement its Safeguards Agreement and its other obligations.

68. The Director General looks forward to reporting further progress, including in relation to the implementation of the initial practical measures, to the next meeting of the Board of Governors in March 2014.

[62] GOV/2013/40, para. 64.

[63] GOV/2013/40, para. 65.

[64] The Board of Governors has confirmed on numerous occasions, since as early as 1992, that paragraph 2 of INFCIRC/153 (Corr.), which corresponds to Article 2 of Iran's Safeguards Agreement, authorizes and requires the Agency to seek to verify both the non-diversion of nuclear material from declared activities (i.e. correctness) and the absence of undeclared nuclear activities in the State (i.e., completeness) (see, for example, GOV/OR.864, para. 49 and GOV/OR.865, paras. 53-54).

Annex I

List of declared nuclear facilities and locations outside facilities in Iran

Tehran:

1. Tehran Research Reactor (TRR)
2. Molybdenum, Iodine and Xenon Radioisotope Production Facility (MIX Facility)
3. Jabr Ibn Hayan Multipurpose Laboratories (JHL)

Esfahan:

4. Miniature Neutron Source Reactor (MNSR)
5. Light Water Sub-Critical Reactor (LWSCR)
6. Heavy Water Zero Power Reactor (HWZPR)
7. Uranium Conversion Facility (UCF)
8. Fuel Manufacturing Plant (FMP)
9. Fuel Plate Fabrication Plant (FPFP)
10. Enriched UO_2 Powder Plant (EUPP)

Natanz:

11. Fuel Enrichment Plant (FEP)
12. Pilot Fuel Enrichment Plant (PFEP)

Fordow:

13. Fordow Fuel Enrichment Plant (FFEP)

Arak:

14. Iran Nuclear Research Reactor (IR-40 Reactor)

Karaj:

15. Karaj Waste Storage

Bushehr:

16. Bushehr Nuclear Power Plant (BNPP)

Darkhovin:

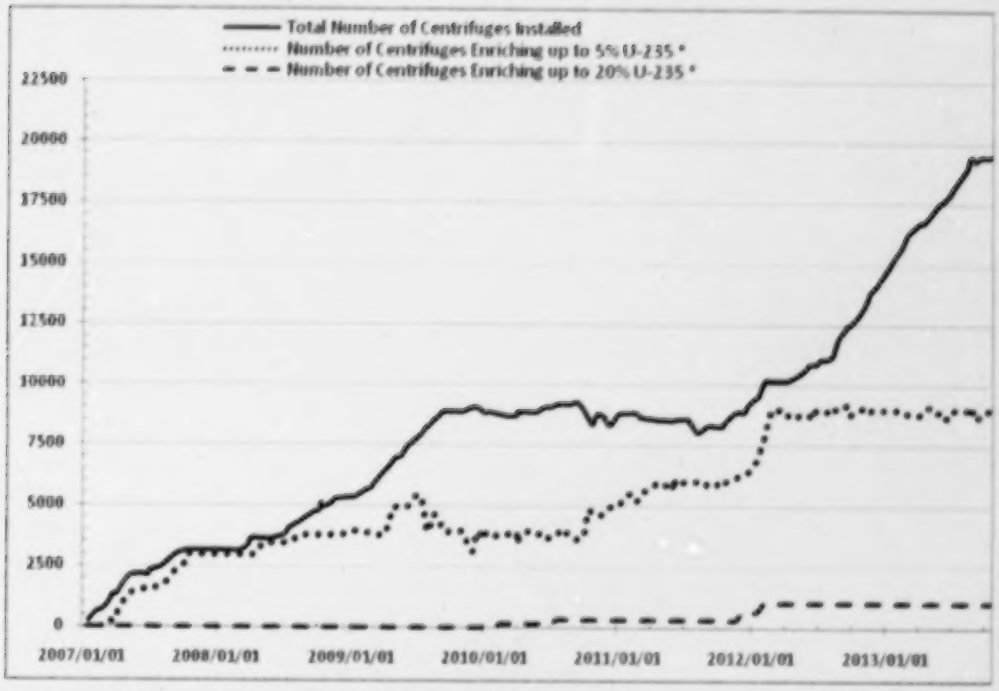
17. 360 MW Nuclear Power Plant

Locations outside facilities:

Nine locations outside facilities where nuclear material is customarily used (LOFs) (all situated within hospitals)

Annex II

Figure 1
Status of centrifuges in Iran



Note 1: Centrifuges involved in R&D activities are not included.
* Not all of the centrifuges fed with UF_6 may have been working.

Table 1
Summary of UF_6 production and flows

	Date	*Quantity*	*Enrichment*
Produced at UCF	26 October 2013	550 000 kg	Natural
Fed into FEP	5 November 2013	118 470 kg	Natural
Produced at FEP	5 November 2013	10 357 kg	Up to 5%
Fed into PFEP	25 October 2013	1 540.8 kg	Up to 5%
Produced at PFEP	25 October 2013	189.0 kg	Up to 20%
Fed into FFEP	1 November 2013	1 609.3 kg	Up to 5%
Produced at FFEP	1 November 2013	221.4 kg	Up to 20%

Table 2
Inventory of UF_6 enriched to 20% U-235

Produced at FFEP and PFEP	410.4 kg
Fed into conversion process	213.5 kg
Downblended	1.6 kg
Stored as UF_6	196 kg approximately

Table 3
Conversion at UCF

Conversion process	*Quantity produced*	*Transferred to FMP*
UF_6 (~3.4% U-235) into UO_2	24 kg U	24 kg U
Natural UOC into UO_2	11 524 kg U*	11 524 kg U

* Uranium content in material qualified for fuel fabrication.

Table 4
Fuel manufacturing at FMP

Item	*Number produced*	*Enrichment*	*Unit mass (g U)*	*Number irradiated*
Test fuel rod for IR-40 reactor	3	natural uranium	500	1
Test fuel rod	2	3.4%	500	–
Fuel rod assembly	2	3.4%	6 000	1
Mini IR-40 fuel assembly	1	natural uranium	10 000	1
IR-40 prototype fuel assembly	36	natural uranium	35 500	N/A
IR-40 fuel assembly	10	natural uranium	56 500	–

Table 5
Conversion of UF_6 enriched up to 20% U-235 into U_3O_8 at FPFP

Feed quantity	*Quantity produced*
213.5 kg of UF_6 (144.2 kg U)	88.4 kg U of U_3O_8

Table 6
TRR fuel fabrication at FPFP

Item	*Number produced*	*Enrichment*	*Unit mass (g U)*	*Present at TRR*	*Irradiated*
TRR test plate (NU)	4	natural uranium	5	2	1
TRR test plate	5	19%	75	5	2
TRR control fuel element	6	19%	1 000	5	3
TRR standard fuel element	16	19%	1 400	14	2
Test assembly (with 8 plates)	1	19%	550	1	–